



# California Hydrogen Highway Blueprint

## Implementation Topic Team

### Sub-team RA/M.2 – Public Safety & Risk Analysis

*Implementation Topic Team Public Hearing*

*August 31, 2004*

*CalEPA, Sacramento, CA*



$$\left[ \frac{p^2}{2\mu} + V(r) \right] \psi(r) = E \psi(r)$$

**California Hydrogen Highways**  
[www.hydrogenhighway.ca.gov](http://www.hydrogenhighway.ca.gov)



# Sub-team RA/M.2 – Public Safety & Risk Analysis

## Risk Assessment and Management Issues Overview

- Relatively little experience building and operating hydrogen fueling stations. Of the 6 H<sub>2</sub> stations in CA operating for about 1 year – no problems
- Codes and Standards not fully developed for hydrogen fueling stations until mid 2005 (significant gaps exist)
- Implementation Team Proposes:
  - Until the State addresses all uniform code and regulation issues:
    - Permitting submittals for hydrogen fueling stations should include specific elements related to RA/M.
    - When appropriate codes and standards are adopted, some of these elements may be eliminated.
  - Work with the Fed. Gov't and SDOs/CDOs to supply operational data to develop and refine C&S. (Exposure and



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## Proposed Permitting Submittal Elements (Permanent)

State needs to develop Template(s) for:

- Emergency Response Plan
  - Detailed plan to execute when incident occurs
  - First Responder Training
  - Mitigating impacts from incidents that may occur
- Operation Inspections
  - Enforces safe operations and compliance with C&S





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## Proposed Permitting Submittal Elements (Temporary until C&S adopted)

NOTE: These elements should be required until appropriate C&S for hydrogen fueling stations are adopted OR if station design contains exceptions to the C&S

State develop template(s) for:

- HazOp
  - Detailed design review process to ensure safe design and operation
- Control / Recovery Register
  - Gives details of overall project including site, equipment, and operations
- Quantitative Risk Assessment
  - Measures selected site risks via identification of hazards, analysis of frequency and probability of occurrence, and consequence analysis by applying selected risk criteria





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## Additional Safety Recommendations

State should consider the following actions:

- Create Emergency Strike Team
  - Investigates accidents and incidents
  - Prepares report identifying actions that increase safety; communicate immediately to other H2 station owners
- Require certification of all hydrogen fueling station maintenance providers
- Require documented periodic maintenance inspections
  - Periodically revisited when more equipment and station data are available



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## Additional Suggestions

State should investigate

- Environmental risk of fueling stations and delivery
- Seek appropriate exemptions and/or legislative change. For example: CEQA 70 – Categorically Exempt (CE)
- Developing a hydrogen fueling station specific template for EIS

